SYNTHESIS AND CHARACTERIZATION OF STOVING ALKYD RESIN BASED ON OIL BLENDS OF KARAWILA SEED OIL AND COCONUT OIL

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Abstract

Synthetic resins are used as binders in protective coatings. An alkyd/melamine resin mixture is the usual composition for the preparation of coating called Baking enamel or Stoving enamel cured through functional groups of resin. Mostly these stoving alkyds are short oil alkyd type and synthesized from coconut oil. This research project describes synthetic resins of the alkyd type and synthesize of such resins. Also this research focused on novel modified stoving alkyd resins having improved properties such as Drying time, Film hardness, Adhesion and Gloss which are synthesized using blends of coconut oil and karawila seed oil.

Fatty acid distribution of Coconut oil shows that it is having saturated fatty acids in major quantity and very small amount of oleic and linoleic acids present in the mixture. Coconut oil has an acid value of 3.22 mg g -1and saponification value of 251.9 mg g -1. on the other hand karawila seed (MC43/ oil is havig an acid value of 2.87 mg g-I and saponification value of 203.94 mg g-I. Karawila seed oil consist conjugated trienoic acid in large quantity and shows good drying properties compared to other drying oils. Blending is done to improve the film properties and to monitor air drying ability of alkyd synthesized by oil blends.

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Both the oils are having low acid values and this leads to the selection of monoglyceride process as the method of manufacturing. Better film properties could be obtained when a mixture of Propylene Glycol and Pentaerythritol was used as polyols with excess OH. Film properties were compared by gradually increasing the karawila oil -content to a maximum of 10%, since the yield ofkarawila seed oil is 24%1 while maintaining the oil length at 45%. Excellent film properties were shown for the oil percentage of karawila seed oil in the total mixture is 10%.